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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,296	07/06/2005	Zhenghe Han	931A 3750 PCT	6638

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EXAMINER

WARTALOWICZ, PAUL A

ART UNIT	PAPER NUMBER
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1793

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04/13/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,296	Applicant(s) HAN ET AL.	
	Examiner PAUL A. WARTALOWICZ	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

Applicant's arguments filed 1/23/09 have been fully considered but they are not persuasive.

Applicant argues that the particle beam formed by plasma sputtering can be performed on a larger area of the material surface, and is much more effective to clean and smooth the material surface.

However, it appears that the ion beam generated by the prior art (ion beam) is substantially similar to that of the claimed invention (plasma sputtering). It appears that the instantly claimed product by process is the same as that which is claimed (particle beam). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*, 173 USPQ 685 and *In re Fessman*, 180 USPQ 324.

It appears that applicant is arguing the advantages of the process of making the particle beam, but not that the particle beam of the prior art is structurally different the particle beam of the claimed invention.

Applicant argues that Shindo and Chu do not teach a particle beam formed by plasma sputtering.

However, Shindo and Chu are not relied upon to teach a particle beam formed by plasma sputtering. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually

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where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that Doi teaches GaAs on silver as a substrate for superconductors which are used in liquid nitrogen, and are not high temperature superconductors.

However, it appears that Doi discloses GaAs on silver, and GaAs single crystal substrate (col. 7, lines 45-55). However, one of ordinary skill in the art would be motivated to look to Doi as Doi teaches superconducting substrates that have a cubic structure (col. 7). The use of substrates having a cubic structure is equally applicable to high temperature and low temperature superconductors. Therefore, one skilled in the art would look to Doi to teach a GaAs substrate for high temperature superconductors.

Additionally, Doi teaches that GaAs is a semiconductor substrate for superconductors (col. 1, 7).

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 5, 9, 10-13, 17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hebard (U.S. 4966885).

Hebard teaches a process wherein a superconducting material YBCO is treated at the claimed energy and incidence angle wherein the ions are chosen from the claimed elements (col. 2).

As the process of irradiating the superconductor at the claimed process conditions, it appears that the modification would be bulk, external, or internal; the surface of the material is monocrystalline, amorphous, or polycrystalline; the surface is polished or unpolished.

These claimed properties appear to be inherently taught by the prior art as the prior art process is substantially similar to the claimed process.

Regarding the limitation of the particle beam is generated by a plasma sputtering device, it appears that the ion beam generated by the prior art (ion beam) is substantially similar to that of the claimed invention (plasma sputtering). It appears that the instantly claimed product by process is the same as that which is claimed (particle beam). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*. 173 USPQ 685 and *In re Fessman*, 180 USPQ 324.

Claims 1-4, 6, 8, 10-13, and 16 are rejected under 35 U.S.C. 102(b, e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Reade et al. (U.S. 6809066).

Reade et al. teach a method for ion texturing superconducting devices (col. 1) wherein materials to be textured include MgO, YSZ, ceria, nickel alloys, etc. (col. 3) wherein the claimed elements are used in the ion beam, claimed energies (col. 13) and the claimed angles (col. 11) are disclosed.

As the process of irradiating the superconductor at the claimed process conditions, it appears that the modification would be bulk, external, or internal; the surface of the material is monocrystalline, amorphous, or polycrystalline; the surface is polished or unpolished.

These claimed properties appear to be inherently taught by the prior art as the prior art process is substantially similar to the claimed process.

As to the limitation of wherein alloying constituents of the metal alloys are at least 0.1 wt%, one of ordinary skill in the art at the time applicant's invention was made would recognize that this limitation would be met by a multitude of metal alloys that would be used in accordance with the invention.

Regarding the limitation of the particle beam is generated by a plasma sputtering device, it appears that the ion beam generated by the prior art (ion beam) is substantially similar to that of the claimed invention (plasma sputtering). It appears that the instantly claimed product by process is the same as that which is claimed (particle beam). When the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct and not the examiner to show the same process as making. *In re Brown*. 173 USPQ 685 and *In re Fessman*, 180 USPQ 324.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 5, 9, 10-13, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebard (U.S. 4966885) in view of Desu et al. (US 5873977) or Kroger (US 4536414).

Hebard teaches a process wherein a superconducting material YBCO is treated at the claimed energy and incidence angle wherein the ions are chosen from the claimed elements (col. 2).

As the process of irradiating the superconductor at the claimed process conditions, it appears that the modification would be bulk, external, or internal; the

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surface of the material is monocrystalline, amorphous, or polycrystalline; the surface is polished or unpolished.

These claimed properties appear to be inherently taught by the prior art as the prior art process is substantially similar to the claimed process.

If the claim requires that the ion beam is generated by a plasma sputtering device, Desu teaches a method of etching a thin film ferroelectric layers and superconductors (col. 1, 5) wherein dry etching techniques such as ion beam etching, plasma etching, and sputtering etching (sputtering etching appears to be equivalent plasma sputtering, col. 3) are well known dry etching techniques.

Kroger teaches a method of making a superconductor (col. 1) wherein it is known to treat substrates with sputter etching in an argon plasma (col. 2-3)

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide sputtering etching in Hebard because sputtering etching (Desu, sputtering etching appears to be equivalent plasma sputtering, col. 3; Kroger, col. 2, 3) is a well known dry etching technique as taught by Desu and Kroger and because one of ordinary can select from the known dry etching techniques based upon routine experimentation and considerations such as cost and design.

Claims 1-4, 6, 8,10-13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reade et al. (U.S. 6809066) in view of Desu et al. (US 5873977) or Kroger (US 4536414).

Reade et al. teach a method for ion texturing superconducting devices (col. 1) wherein materials to be textured include MgO, YSZ, ceria, nickel alloys, etc. (col. 3) wherein the claimed elements are used in the ion beam, claimed energies (col. 13) and the claimed angles (col. 11) are disclosed.

As the process of irradiating the superconductor at the claimed process conditions, it appears that the modification would be bulk, external, or internal; the surface of the material is monocrystalline, amorphous, or polycrystalline; the surface is polished or unpolished.

These claimed properties appear to be inherently taught by the prior art as the prior art process is substantially similar to the claimed process.

As to the limitation of wherein alloying constituents of the metal alloys are at least 0.1 wt%, one of ordinary skill in the art at the time applicant's invention was made would recognize that this limitation would be met by a multitude of metal alloys that would be used in accordance with the invention.

If the claim requires that the ion beam is generated by a plasma sputtering device, Desu teaches a method of etching a thin film ferroelectric layers and superconductors (col. 1, 5) wherein dry etching techniques such as ion beam etching, plasma etching, and sputtering etching (sputtering etching appears to be equivalent plasma sputtering, col. 3) are well known dry etching techniques.

Kroger teaches a method of making a superconductor (col. 1) wherein it is known to treat substrates with sputter etching in an argon plasma (col. 2-3)

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide sputtering etching in Reade because sputtering etching (Desu, sputtering etching appears to be equivalent plasma sputtering, col. 3; Kroger, col. 2, 3) is a well known dry etching technique as taught by Desu and Kroger and because one of ordinary can select from the known dry etching techniques based upon routine experimentation and considerations such as cost and design.

Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebard (U.S. 4966885) in view of Chu et al. (U.S. 6251835).

Hebard teach a method as described above.

Hebard fail to teach wherein the superconductor is annealed at the claimed temperature after texturing.

Chu et al. teach a method of making superconductors (col. 1) wherein the YBCO is annealed after ion texturing for the purpose of restore crystallinity (col. 8-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide the YBCO is annealed after ion texturing in Hebard in order to restore crystallinity (col. 8-9) as taught by Chu et al.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reade et al. (U.S. 6809066) in view of Doi et al. (U.S. 6316391) and Shindo et al. (U.S. 5738731).

Reade et al. teach a method of texturing superconductors as described above.

Reade et al. fail to teach a method of texturing semiconductors.

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Shindo et al., teach a method of making a solar cell (col. 1) wherein it is known to texture the claimed semiconductors (col. 181-182, Entire Document).

Doi et al. teach that it is known to use GaAs as a substrate for a superconductor (col. 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein it is known to texture the claimed semiconductors (col. 181-182, Entire Document) in Reade et al. in order to provide a textured substrate for a superconductor (col. 7) as taught by Shindo et al. and Doi et al., respectively.

Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hebard (U.S. 4966885) in view of Chu et al. (U.S. 6251835) and Desu et al. (US 5873977) or Kroger (US 4536414).

Hebard teach a method as described above.

Hebard fail to teach wherein the superconductor is annealed at the claimed temperature after texturing.

Chu et al. teach a method of making superconductors (col. 1) wherein the YBCO is annealed after ion texturing for the purpose of restore crystallinity (col. 8-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide the YBCO is annealed after ion texturing in Hebard in order to restore crystallinity (col. 8-9) as taught by Chu et al.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reade et al. (U.S. 6809066) in view of Doi et al. (U.S. 6316391) and Shindo et al. (U.S. 5738731) and Desu et al. (US 5873977) or Kroger (US 4536414).

Reade et al. teach a method of texturing superconductors as described above.

Reade et al. fail to teach a method of texturing semiconductors.

Shindo et al., teach a method of making a solar cell (col. 1) wherein it is known to texture the claimed semiconductors (col. 181-182, Entire Document).

Doi et al. teach that it is known to use GaAs as a substrate for a superconductor (col. 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein it is known to texture the claimed semiconductors (col. 181-182, Entire Document) in Reade et al. in order to provide a textured substrate for a superconductor (col. 7) as taught by Shindo et al. and Doi et al., respectively.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL A. WARTALOWICZ whose telephone number is (571)272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Paul Wartalowicz
April 10, 2009

/Stanley Silverman/
Supervisory Patent Examiner, Art Unit 1793